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## Beam dynamics corrections to the measured anomalous precession frequency at the Muon g-2 experiment at Fermilab

The Fermilab Muon g-2 experiment is designed to determine the muon's magnetic moment anomaly with an unprecedented precision of 0.14 parts per million (ppm). This anomaly is extracted from the ratio of the muon' s anomalous spin precession frequency within a magnetic storage ring to the magnetic field experienced by the ensemble of muons. However, the measured precession frequency is subject to systematic biases arising from muon beam dynamics. In our analysis, we account for two primary categories of systematic effects: (i) reductions in the spin precession frequency due to electric fields and vertical motion, and (ii) variations in the precession phase over the course of the measurement period. In this presentation, we outline the beam dynamics corrections implemented in the analysis of the data collected from 2020 to 2023 and provide an update on developments since the previous result announcement.

## Secondary track

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